FEM1.209:390816, 390848, etc

FLOOD INSURANCE STUDY

AUGLAIZE COUNTY, OHIO AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BUCKLAND, VILLAGE OF	390816
NEW KNOXVILLE, VILLAGE OF	390848
ST. MARY'S, CITY OF	390022
WAPAKONETA, CITY OF	390023
UNINCORPORATED AREAS	390761

SEPTEMBER 6, 1989

Federal Emergency Management Agency

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY

AUGLAIZE COUNTY, OHIO,
AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Auglaize County, Ohio, including the Village of Buckland, the Village of New Knoxville, the City of St. Marys, the City of Wapakoneta, and the Unincorporated Areas of Auglaize County (hereinafter referred to collectively as Auglaize County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The approximate hydrologic and hydraulic analyses for the St. Marys River were performed by the U.S. Geological Survey (USGS), Water Resources Division, (a Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823, in September 1986.

The hydrologic and hydraulic analyses for the remaining study streams were performed by the U.S. Army Corps of Engineers (COE), Buffalo District, (a Study Contractor) for FEMA, under Inter-Agency Agreement No. EMW-86-E-2226. This study was completed in February 1987.

1.3 Coordination

A community meeting was held on January 14, 1985, to explain the nature and purpose of this Flood Insurance Study. The meeting was attended by representatives of the community, FEMA, and the Study Contractors. Another meeting was held October 30, 1985, for the same purpose. A notice was placed in newspapers to announce the intent to perform a Flood Insurance Study and to request pertinent information.

On September 21, 1988, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractors, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the geographic area of Auglaize County, Ohio. The area of study is shown on the Vicinity Map (Figure 1).

Flooding caused by overflow of the Auglaize River [illegible] and Lake St. Marys was studied in detail.

Approximate analysis was used to study flood hazards on the St. Marys River in the vicinity of the City of St. Marys. The basis of the analysis is the assumption that the 1959 flood on the St. Marys River closely approximates a 100-year recurrence interval flood event.

Areas having low development potential or minimal flood hazards were previously studied using approximate analyses. The results were shown on the Flood Hazard Boundary Maps for Auglaize County, Ohio, the City of St. Marys, Ohio, and the Village of New Knoxville, Ohio (References 1-3) and are incorporated into this Flood Insurance Study.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through February 1992. The scope and methods of study were proposed to and agreed upon by FEMA and Auglaize County.

2.2 Community Description

Auglaize County is in west-central Ohio and has a total land area of 394 square miles. The county is bordered by Mercer County on the west, Van Wert and Allen Counties on the north, Hardin and Logan Counties on the east, and Logan and Shelby Counties on the south. The 1980 population of Auglaize County, which is primarily rural, was reported to be 42,554 (Reference 4).

The climate of Auglaize County is characterized by wide variations of temperature and precipitation. The maximum temperature recorded at the nearest climatological data station is 101 degrees Fahrenheit (°F), recorded in August 1951, and the minimum is -19 °F, recorded in January 1951. The maximum 24-hour rainfall, recorded on September 14, 1969, is 7.5 inches, and the maximum 24-hour snowfall, recorded on January 14, 1978, is 19.0 inches (Reference 5).

2.3 Principal Flood Problems

Flooding occurred throughout much of Ohio during the March 1913 flood on the Auglaize River, which was produced by one of the most severe rainstorms of record in northwestern Ohio. [illegible]

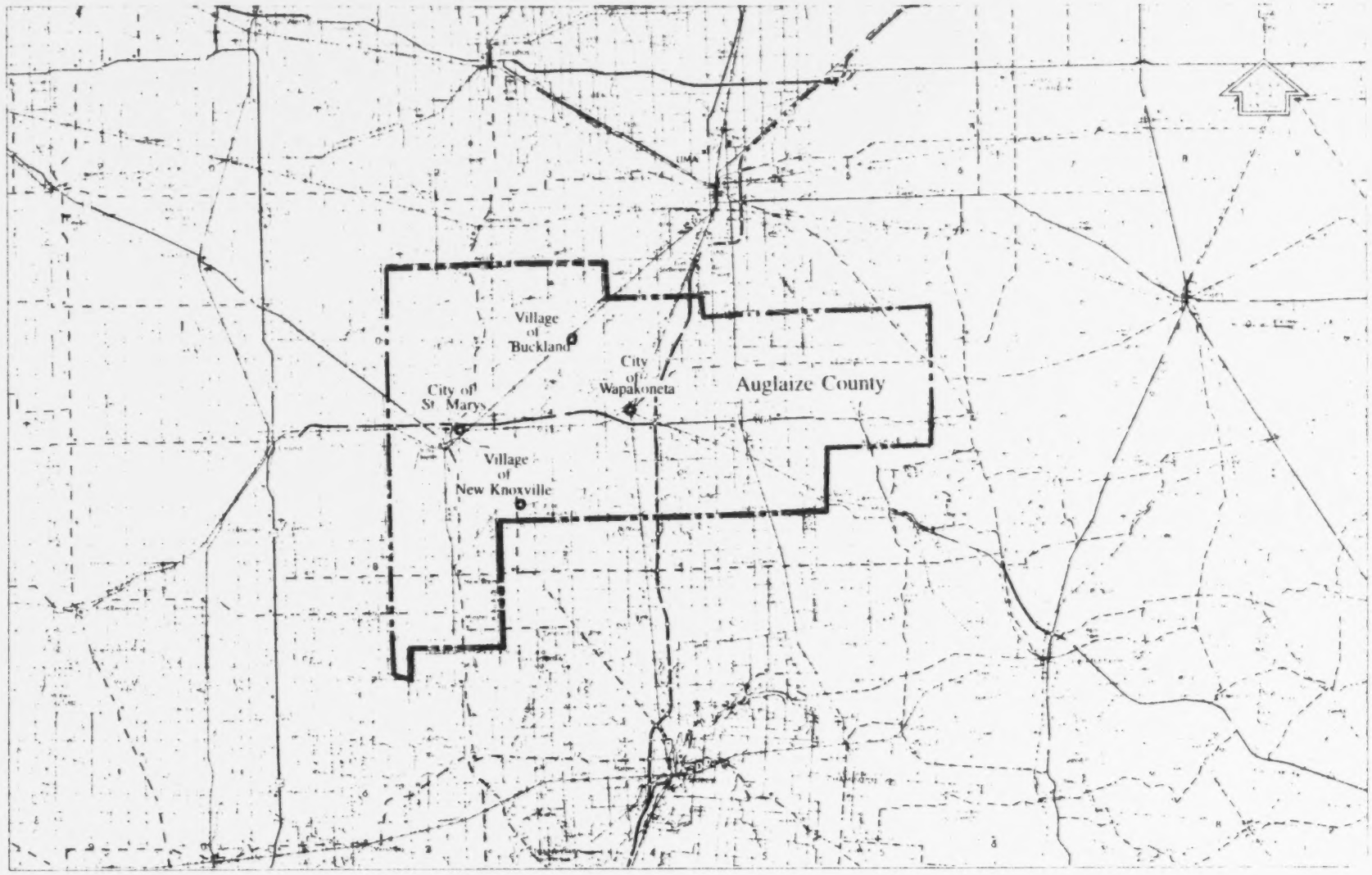


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

AUGLAIZE COUNTY, OH AND INCORPORATED AREAS

APPROXIMATE SCALE

8 0 8 16 24 MILES

VICINITY MAP

and 7 inches throughout the Auglaize River watershed. High-water marks along the river indicate that this flood was higher than any other that has occurred since that time. Damage to homes and river property was extensive in the City of Wapakoneta (Reference 6).

The flood of January 1959 was the second highest flood of record on the Auglaize River in the Wapakoneta area. A storm center, passing south of the Maumee River basin, produced the heaviest rain in the southern part of the basin. Frozen ground increased the rate of runoff and the Auglaize River overflowed its banks north of Wapakoneta, flooding hundreds of acres of farmland.

In June 1980, extensive flooding occurred on the Auglaize River in and around Wapakoneta and floodwaters overtopped County Route 25A just north of Wapakoneta.

The most extensive flooding from the St. Marys River occurred in March 1913 and January 1959; the 1913 flood had the greater magnitude. The City of St. Marys experienced severe damage from the January 1959 flood. The sewage treatment plant was flooded, with damage estimated at $100,000 (Reference 7). Buildings in the downtown section of St. Marys immediately adjacent to the river experienced flooding. The high school, located just upstream of the downtown area, also experienced flooding. Low-lying areas upstream of the present Greenville Road were inundated due to the low terrain at the confluence of Armstrong Creek and Koop Creek. Residents reported to the City of St. Marys Engineering Department that Armstrong Creek was flowing in the opposite direction from its normal flow as a result of a backwater effect from the St. Marys River. The Engineering Department stated that this phenomenon has occurred in other recent high-water events in St. Marys when the flow of the St. Marys River was significant.

Another problem affecting flooding in the St. Marys area during the 1913 and 1959 floods resulted from regulation of the level of Grand Lake St. Marys. This upland reservoir was formed in the early 1800's by levees across the Wabash River in the west and the St. Marys River in the east, for the purpose of supplying water to the Ohio and Erie Canal. During the 1913 and 1959 floods, there appeared to be danger from overtopping the western levee, so water was released into the St. Marys branch of the Ohio and Erie Canal. The additional water overtopped the canal within the St. Marys city limits, adding to flooding from the upstream reaches of the St. Marys River.

2.4 Flood Protection Measures

Nonstructural measures of flood protection used in Auglaize County to aid in the prevention of flood damage include land use regulations, adopted from the Code of Federal Regulations, that control building within areas that have a high risk of flooding.

A levee and floodwall are constructed around the new sewage disposal plant at Wapakoneta that protects the plant from the base flood. Also in

Wapakoneta, a concrete wall along the south bank of the Auglaize River between the Blackhoff Street bridge and the Harrison Street bridge offers some protection but does not protect the area from the 100-year event.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The discharges for the Auglaize River and Quaker Run were established using Ohio Department of Natural Resources (ODNR) Bulletin No. 45 (Reference 8). Basin characteristics, such as drainage area and channel slope, were determined using topographic maps (Reference 9).

The profile of the January 1959 flood (Reference 10) was obtained from the ODNR, Division of Water, and used for the St. Marys River. No direct or indirect determination of the discharge of the January 1959 flood was made for the St. Marys River. The lack of a discharge measurement makes it difficult to definitively assess the recurrence interval of the 1959 event. Use of the current ODNR regional multiple regression equations (Reference 10) to estimate the 100-year discharge was not possible due to the 50-square-mile maximum drainage area limitation.

A comparison was made of basins, including the Auglaize River basin, which is near the St. Marys River, by calculating the ratio of the January 1959 flood discharge to the USGS stream gage log-Pearson Type III (Reference 11) estimate for the 100-year discharge. The comparison yielded ratio values close to 1, indicating that the January 1959 event has an approximate recurrence interval of 100 years at the stream-gage sites.

Accordingly, the January 1959 flood profile for the St. Marys River can be used for regulatory purposes as the 100-year flood event.

Peak discharge-drainage area relationships for the 100-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 100-YEAR
AUGLAIZE RIVER		
at the northern county boundary	202	8,350
just upstream of Sims Run	190	8,000
just upstream of Two Mile Creek	158	7,000
just upstream of State Route 197	148	6,850
just upstream of Pusheta Creek	113	5,600
just upstream of Quaker Run	104	5,250
QUAKER RUN		
at mouth	5.7	810

Elevations for floods of the selected recurrence intervals of Grand Lake St. Marys are shown in Table 2.

TABLE 2 - SUMMARY OF ELEVATIONS

FLOODING SOURCE AND LOCATION	PEAK ELEVATION (FEET NGVD) 100-YEAR
GRAND LAKE ST. MARYS	
within community	873.0

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Some cross-section data for the streams and overbank areas were obtained by field survey and from topographic maps (Reference 9). Bridges were surveyed to obtain elevation data and structural geometry. Other cross-section data were obtained from a hydraulic model that was developed by the COE for backwater computations on the Auglaize River.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Water-surface profiles were developed for the Auglaize River and Quaker Run using the HEC-2 step-backwater computer program (Reference 12). The starting water-surface elevations for the Auglaize River and Quaker Run were obtained using normal depth calculations. The 100-year elevation of Grand Lake St. Marys was based on the "Survey Report for Flood Control-Grand Lake St. Marys" (Reference 13).

Roughness coefficients (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observation of the streams and floodplain areas. For the Auglaize River, the Manning's "n" values range from 0.03 to 0.055 for the channel sections and from 0.05 to 0.15 for the overbank areas. For Quaker Run, the "n" values range from 0.05 to 0.07 for the channel sections and from 0.05 to 0.09 for the overbank areas. For both streams, the contraction and expansion loss coefficients were 0.2 and 0.4, respectively.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the map and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year

floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 5 feet (Reference 9).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AH, AO, A99, V, and VE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary was delineated using the Flood Hazard Boundary Maps for Auglaize County, the City of St. Marys, and the Village of New Knoxville (References 1-3).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The floodways presented in this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 3, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and the 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
AUGLAIZE RIVER								
V	77,915	415	2401	2.3	872.4	872.4	872.8	0.4
W	81,520	169	1458	3.8	876.6	876.6	877.4	0.8
X	84,840	158	1575	3.6	878.8	878.8	879.3	0.5
Y	86,530	186	2147	2.6	879.4	879.4	879.9	0.5
Z	87,955	305	1777	3.2	879.9	879.9	880.4	0.5
AA	90,500	95	854	6.2	882.5	882.5	883.0	0.5
AB	95,030	266	2212	2.4	886.1	886.1	886.8	0.7
QUAKER RUN								
A	2,180[2]	42	217	3.7	885.9	885.9	886.3	0.4
B	4,630[2]	151	490	1.7	890.8	890.8	891.7	0.9

[1]FEET ABOVE COUNTY BOUNDARY
[2]FEET ABOVE MOUTH

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

AUGLAIZE COUNTY, OH AND INCORPORATED AREAS

FLOODWAY DATA

AUGLAIZE RIVER—QUAKER RUN

point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

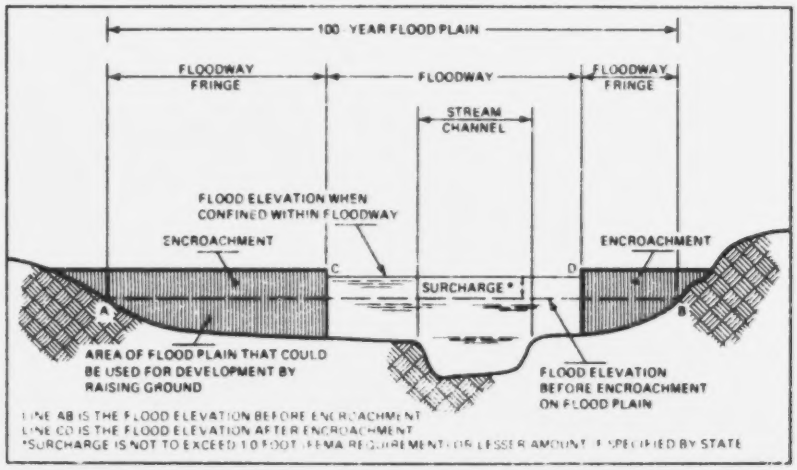

100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE *
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT SPECIFIED BY STATE

FIGURE 2 - Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current Flood Insurance Rate Map presents flooding information for the geographic area of Auglaize County. Previously, separate Flood Hazard Boundary Maps and/or Flood Insurance Rate Maps were prepared for each flood-prone incorporated community and the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 4, Community Map History.

7.0 OTHER STUDIES

The Flood Insurance Studies published for Shelby County and Logan County, Ohio (References 14 and 15) are in agreement with this study.

The Flood Insurance Studies in progress for Mercer County and Allen County, Ohio (References 16 and 17) are in agreement with this study.

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Maps for Auglaize County, the Cities of St. Marys and Wapakoneta, and the Villages of New Knoxville and Buckland, Ohio (References 1, 2, 18, 3, and 19).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 175 West Jackson Boulevard, 4th Floor, Chicago, Illinois 60604-2698.

9.0 REFERENCES AND BIBLIOGRAPHY

1. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Auglaize County, Unincorporated Areas, Ohio, May 1978.

2. ————, Federal Insurance Administration, Flood Hazard Boundary Map, City of St. Marys, Auglaize County, Ohio, June 1979.

3. ————, Federal Insurance Administration, Flood Hazard Boundary Map, Village of New Knoxville, Auglaize County, Ohio, October 1979.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
BUCKLAND, VILLAGE OF	FEBRUARY 2, 1979		SEPTEMBER 6, 1989	
NEW KNOXVILLE VILLAGE OF	OCTOBER 6, 1978		SEPTEMBER 6, 1989	
ST. MARYS, CITY OF	MAY 7, 1974	JULY 30, 1976	SEPTEMBER 6, 1989	
WAPAKONETA, CITY OF	FEBRUARY 15, 1974	MAY 28, 1976 MAY 18, 1979	SEPTEMBER 6, 1989	
UNINCORPORATED AREAS	MAY 12, 1978		SEPTEMBER 6, 1989	

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

AUGLAIZE COUNTY, OH AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

4. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Ohio, Washington, D.C., February 1982.

5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Climates of the States, 1974.

6. U.S. Army Corps of Engineers, Detroit District, Flood Plain Information, Auglaize River, Wapakoneta, Ohio, May 1968.

7. Ohio Department of Natural Resources, Division of Water, Preliminary Report of Floods in Ohio—January 1959, February 1959, March 1959.

8. ————, Division of Water, Bulletin No. 45, Floods in Ohio, Magnitude and Frequency, E.E. Webber and W.P. Bartlett, May 1977.

9. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 5 Feet: Cridersville, Ohio, 1961, photorevised 1983; Moulton, Ohio, 1960, photorevised 1973; St. Marys, Ohio, 1960, photorevised 1982; Spencerville, Ohio, 1960, photorevised 1971; Wapakoneta, Ohio, 1961, photorevised 1982.

10. Ohio Department of Natural Resources, Division of Water, Celina, St. Marys, and Wapakoneta, Ohio Areas—January, 1959 Flood Profile, Beaver Creek, St. Marys River and Auglaize River, Vertical Scale 1:60, Horizontal Scale 1:63360: 1959.

11. U.S. Department of the Interior, Geological Survey, Interagency Advisory Committee on Water Data, Office of Water Data Coordination, Hydrology Subcommittee, Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency, September 1981, revised March 1982.

12. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Computer Program 723-X6-L202A, Davis, California, April 1984.

13. ————, Louisville District, Survey Report for Flood Control - Grand Lake St. Marys, August 1981.

14. Federal Emergency Management Agency, Flood Insurance Study, Shelby County, Unincorporated Areas, Ohio, September 1982.

15. ————, Flood Insurance Study, Logan County, Unincorporated Areas, Ohio, May 1985.

16. ————, Flood Insurance Study, Mercer County, Unincorporated Areas, Ohio, in progress.

17. ————, Flood Insurance Study, Allen County, Unincorporated Areas, Ohio, in progress.

18. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Wapakoneta, Auglaize County, Ohio, May 1979.

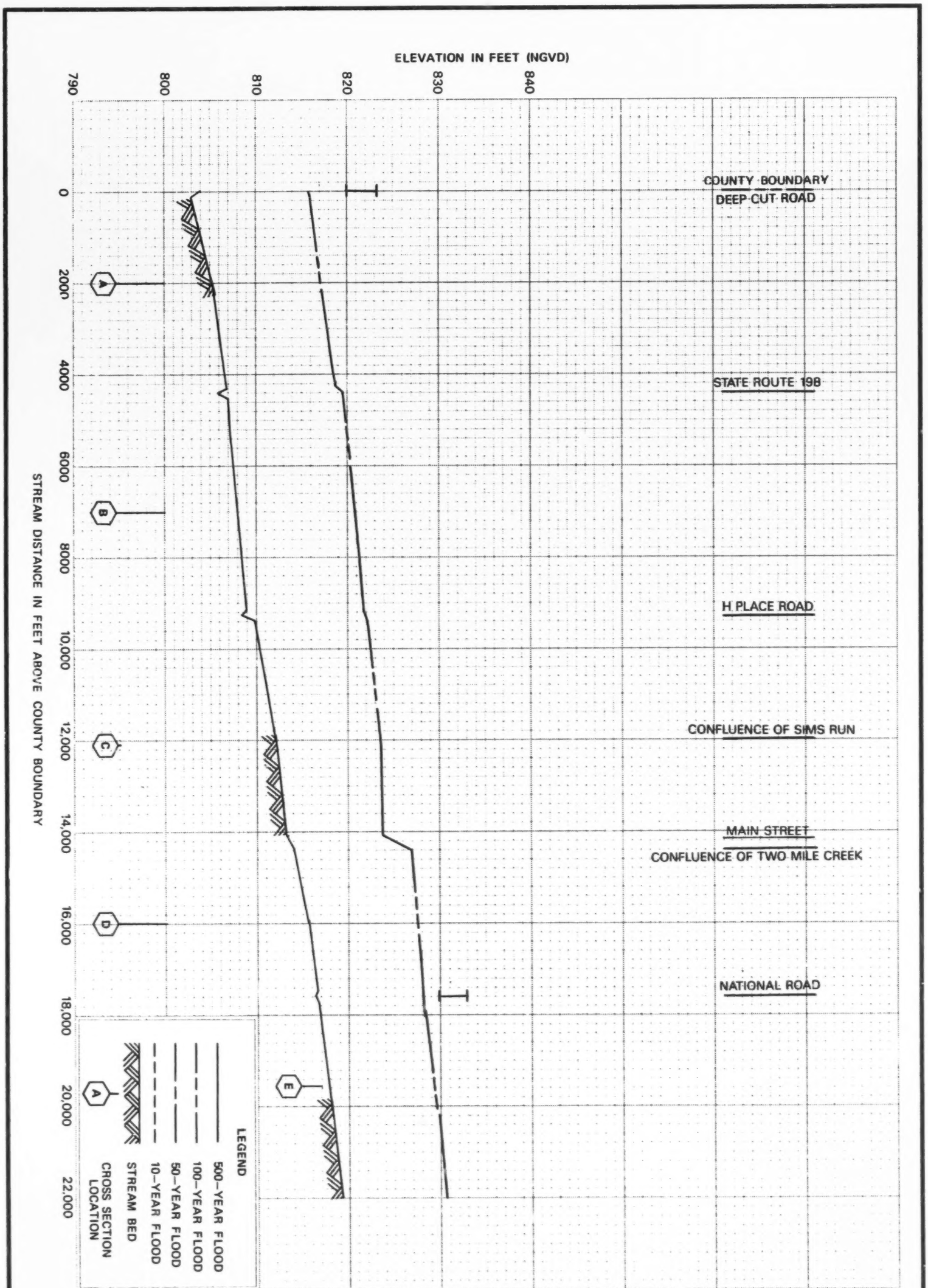
19. ————, Federal Insurance Administration, Flood Hazard Boundary Map, Village of Buckland, Auglaize County, Ohio, February 1979.

ELEVATION REFERENCE MARKS

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
1	0010	822.93	top of northwest abutment of Deep Cut Road bridge over the Auglaize River
2	0020	833.84	northwest corner of northwest wingwall of National Road bridge over the Auglaize River
3	0020	834.12	top of southeast wingwall of Monroe Road bridge over the Auglaize River
4	0020	843.52	metal plate on southwest wingwall of County Route 190 bridge over the Auglaize River
5	0020	855.15	standard tablet stamped "84 MAT 1959 855" set in southeast corner of concrete base located in front of Buckland Coop, about 48 feet west of intersection of Main Street Road and Norfolk Southern Railway
6	0080	896.60	standard tablet stamped "90 MAT 1959 897" set in concrete headwall of culvert located 34 feet northeast of intersection of State Route 703 and Beach Line Road
7	0080	886.96	standard tablet stamped "88 MAT 1959 887" near south end of headwall of culvert located 32 feet southwest of intersection of State Route 703 and State Route 364
8	0085	865.06	boat spike in power pole located on north side of Glynwood Road about 500 feet west of centerline of Glynwood Road bridge over the Auglaize River
9	0105	886.06	chiseled mark at corner of northwest abutment of Hamilton Street bridge over the Auglaize River
10	0105	884.20	chiseled square in northeast abutment of Blackhoof Street bridge over the Auglaize River

ELEVATION REFERENCE MARKS

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
11	0105	883.77	brass plate set in southeast abutment of Harrison Street bridge over the Auglaize River
12	0105	894.51	survey disk stamped "T 166 1954" set in top of concrete post located in southwest corner of intersection of Willipie Street and Mechanic Street, 22 feet south of south curb of Mechanic Street, 26.5 feet west of west curb of Willipie Street
13	0105	892.86	survey disk stamped "W 166 1954" set in top east end of north concrete abutment of CSX railroad bridge over the Auglaize River, 8.5 feet east of east rail
14	0105	890.44	chiseled square on top of northwest abutment of culvert for Quaker Run under Middle Street



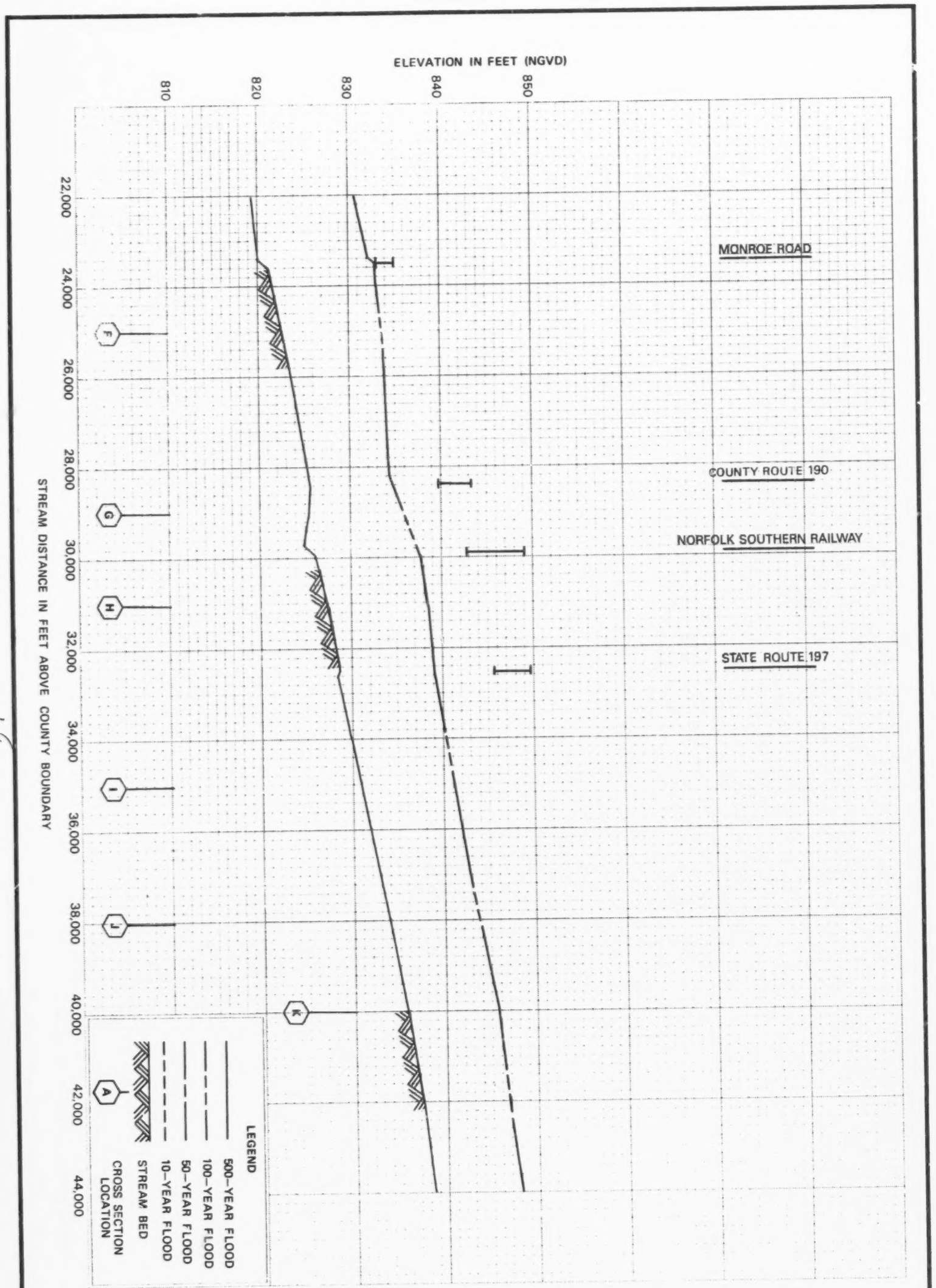
01P

FEDERAL EMERGENCY MANAGEMENT AGENCY

AUGLAIZE COUNTY, OH
AND INCORPORATED AREAS

FLOOD PROFILES

AUGLAIZE RIVER



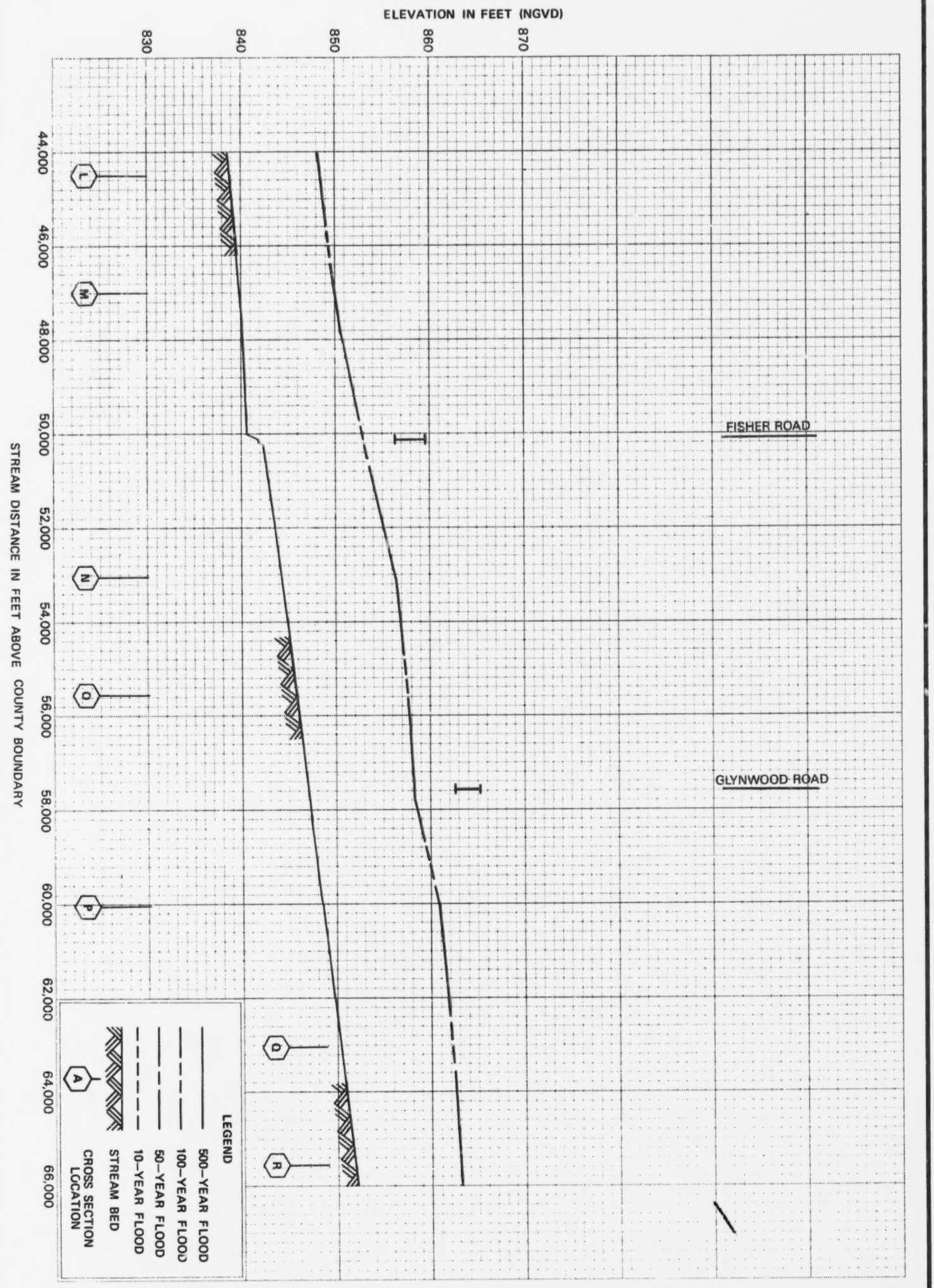
02P

FEDERAL EMERGENCY MANAGEMENT AGENCY

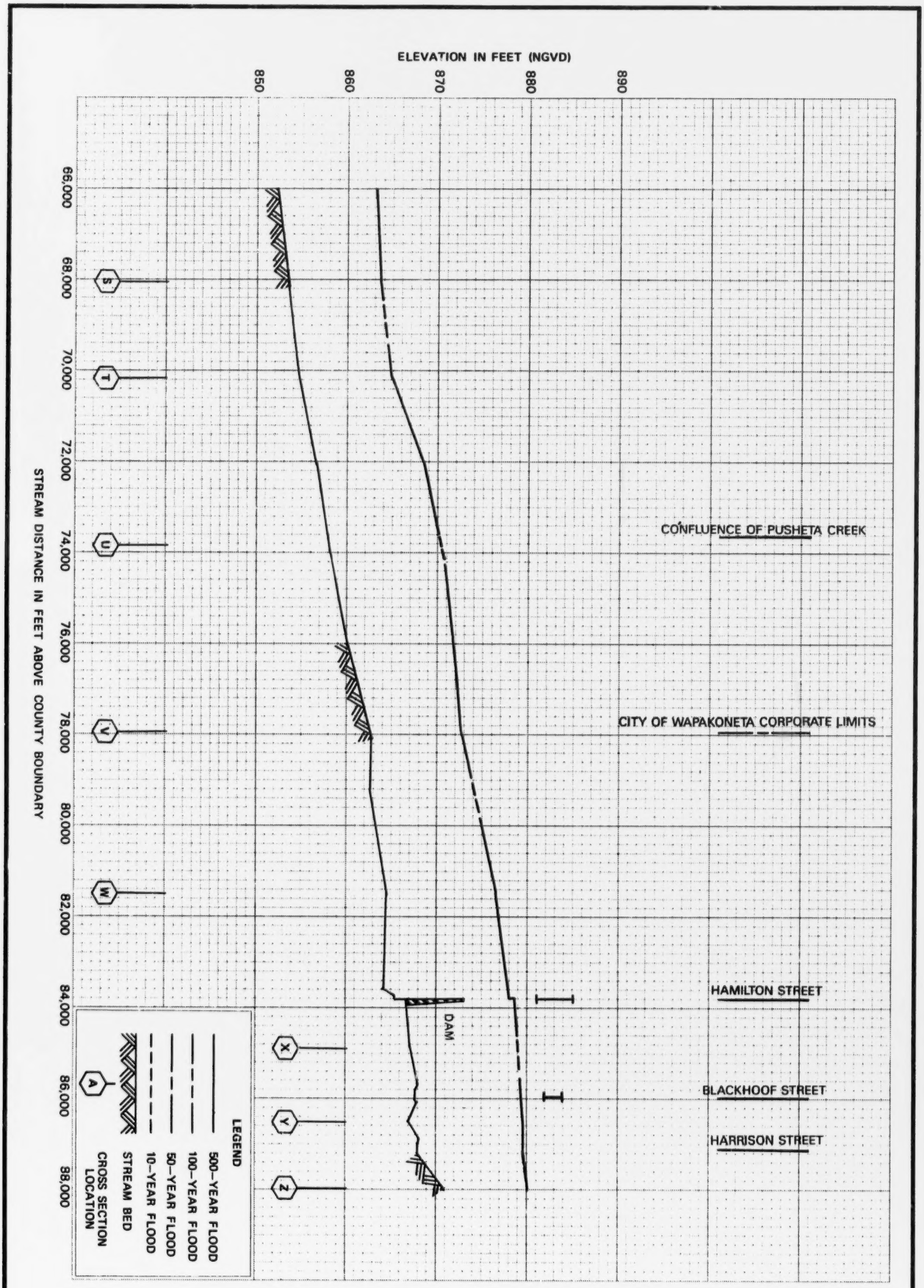
AUGLAIZE COUNTY, OH AND INCORPORATED AREAS

FLOOD PROFILES

AUGLAIZE RIVER



03P	FEDERAL EMERGENCY MANAGEMENT AGENCY AUGLAIZE COUNTY, OH AND INCORPORATED AREAS	FLOOD PROFILES AUGLAIZE RIVER



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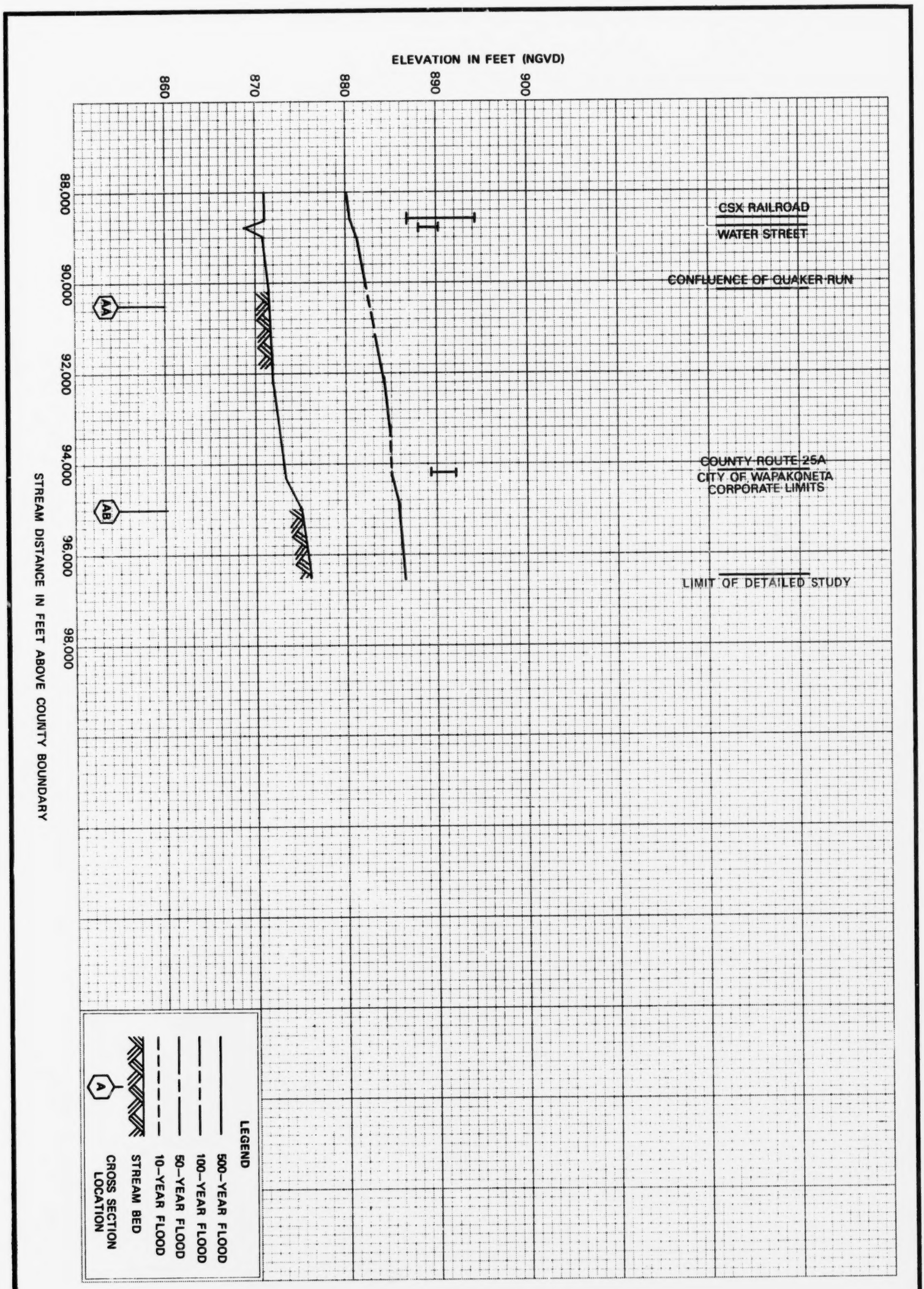
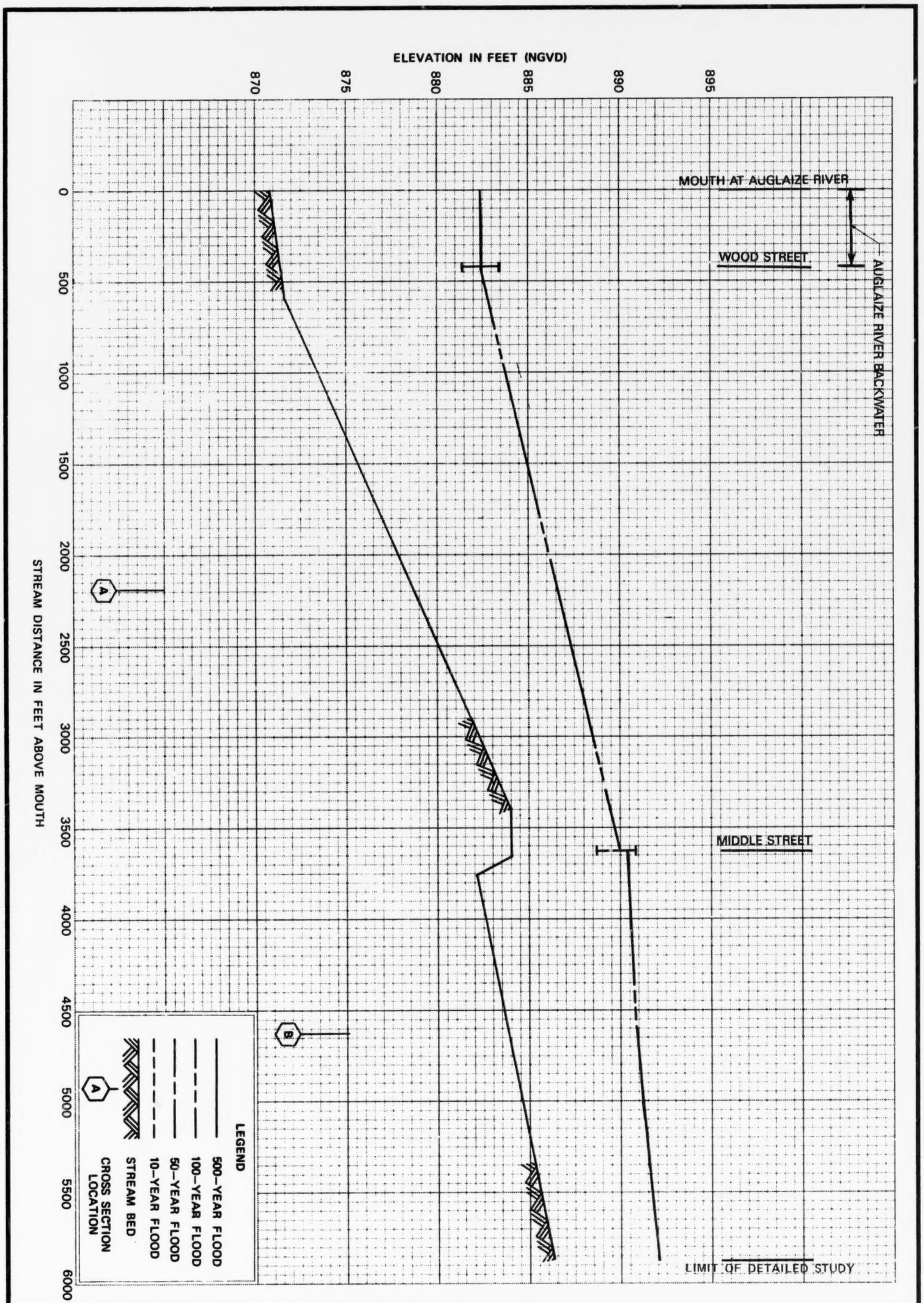


21

05P	FEDERAL EMERGENCY MANAGEMENT AGENCY AUGLAIZE COUNTY, OH AND INCORPORATED AREAS	FLOOD PROFILES AUGLAIZE RIVER



06P	FEDERAL EMERGENCY MANAGEMENT AGENCY AUGLAIZE COUNTY, OH AND INCORPORATED AREAS	FLOOD PROFILES QUAKER RUN